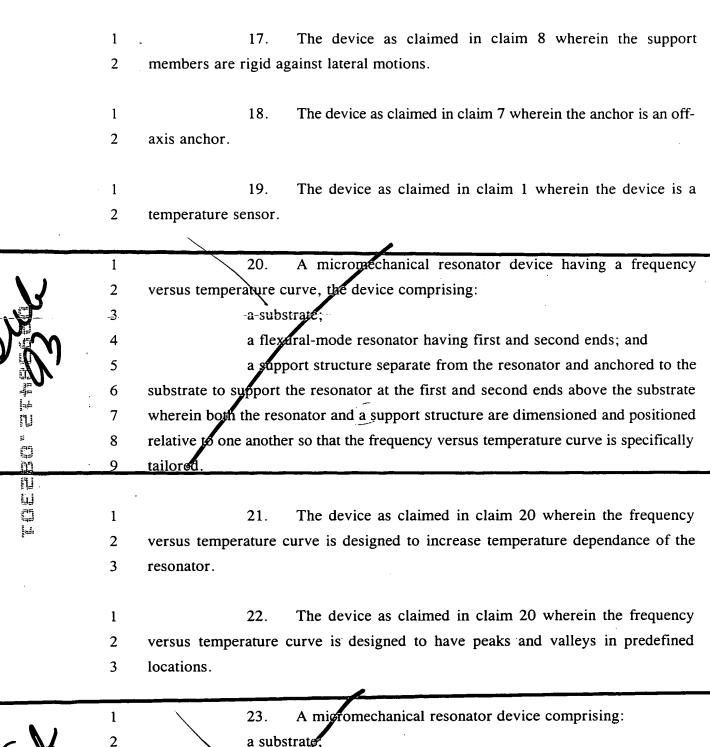


WHAT IS CLAIMED IS:

	1	1. A temperature-compensated, micromechanical resonator
_	2	device comprising:
	3	a substrate;
W	4	a flexural-mode resonator having first and second ends; and
У 🔪	5	a temperature-compensating support structure separate from the
3	6	resonator and anchored to the substrate to support the resonator at the first and
	7	second ends above the substrate wherein both the resonator and a support structure
	8	are dimensioned and positioned relative to one another so that the resonator has
in a	9	enhanced thermal stability.
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	2. The device as claimed in claim 1 further comprising a drive
14 13	2	electrode structure formed on the substrate at a position to allow electrostatic
7. by (2.) (2. d.) (4.)	3	excitation of the resonator wherein the resonator and the drive electrode structure
	4	define a first gap therebetween.
	7	define a mot gap merceson com
Δĵ	1	3. The device as claimed in claim 2 wherein the first gap is a
1 0mm 10mm	2	submicron lateral capacitive gap.
	2	Submiction fateral capacitive gap.
17/	1	4. The device as claimed in claim 2 further comprising a sense
/nx _	2	electrode structure formed on the substrate at a position to sense output current
3,00	2	based on motion of the resonator wherein the resonator and the sense electrode
V	-3	<i>1</i>
	4	define a second gap therebetween.
		5. The device as claimed in claim 4 wherein the second gap is
	1	
	2	a submicron lateral capacitive gap.
	1	6. The device as claimed in claim 1 wherein the resonator is a
	2	single resonator beam.
	1	7. The device as claimed in claim 1 wherein the support
	2	structure includes an anchor for rigidly anchoring the first end of the resonator to



- the substrate and a folding truss support structure for substantially decoupling the second end of the resonator from the substrate.
- 1 8. The device as claimed in claim 1 wherein the resonator is a 2 lateral resonator and wherein the support structure includes a pair of stress 3 generating support members dimensioned relative to the resonator so that the
- 4 resonator has enhanced thermal stability.
- 1 9. The device as claimed in claim 1 wherein the resonator is a polysilicon resonator.
- 1 The device as claimed in claim 9 wherein the resonator is a polysilicon resonator beam.
- 1 11. The device as claimed in claim 4 wherein the electrode 2 structures are metal.
- 1 12. The device as claimed in claim 11 wherein the electrode 2 structures include plated metal electrodes.
- 1 13. The device as claimed in claim 1 wherein the substrate is a semiconductor substrate.
- 1 14. The device as claimed in claim 14 wherein the semiconductor substrate is a silicon substrate.
- 1 15. The device as claimed in claim 1 wherein the support structure does not substantially vibrate during vibration of the resonator.
- 1 16. The device as claimed in claim 1 wherein energy losses to the substrate are substantially reduced to allow higher resonator device Q.



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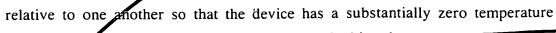
a substrate

a flexural-mode resonator having first and second ends; and

a support structure separate from the resonator and anchored to the substrate to support the resonator at the first and second ends above the substrate wherein both the resonator and a support structure are dimensioned and positioned 7

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coefficient temperature at which the device may be biased.

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